# CARPARK:

## A low-cost, implementable smart parking solution

Parking at UCT during peak hours is challenging as there is an increased demand with limited parking space. Additionally, there is currently no tool that can provide parking information to people parking on campus.

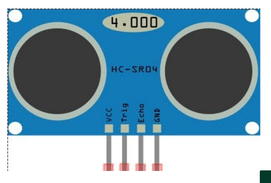
### AIMS

- To design a low-cost smart parking system that has an IoT based sensor and a smartphone app.
- Design an intuitive parking app following user centred design.
- Build a physical sensor for detection

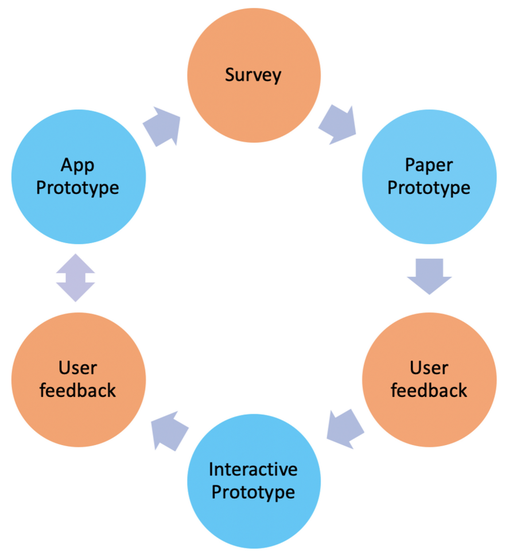
## Sensor Unit with Server

The physical sensor unit was designed with an iterative approach and the following considerations in mind:

- Open-source software
- Trusted and well documented frameworks
- Cheap and reliable components
- All parts fully functional
- Minimalist design



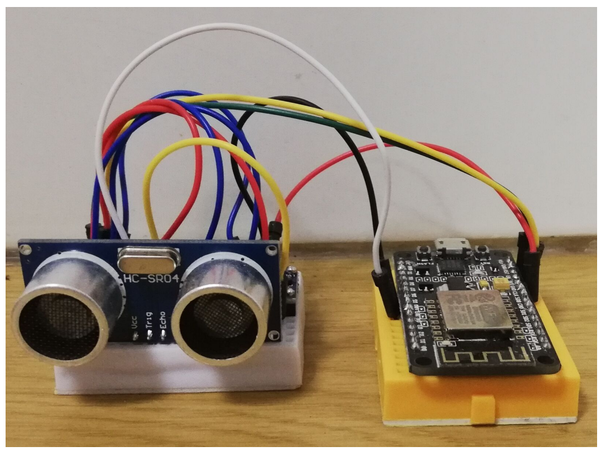

## UCD of Mobile App




For the design of the app, we followed User-Centred Design methodologies:

- Surveys were used to find out about users
- Interviews were used to assess the paper and interactive prototypes with users.
- Focus groups were used for the MVP prototype.

## RESULTS

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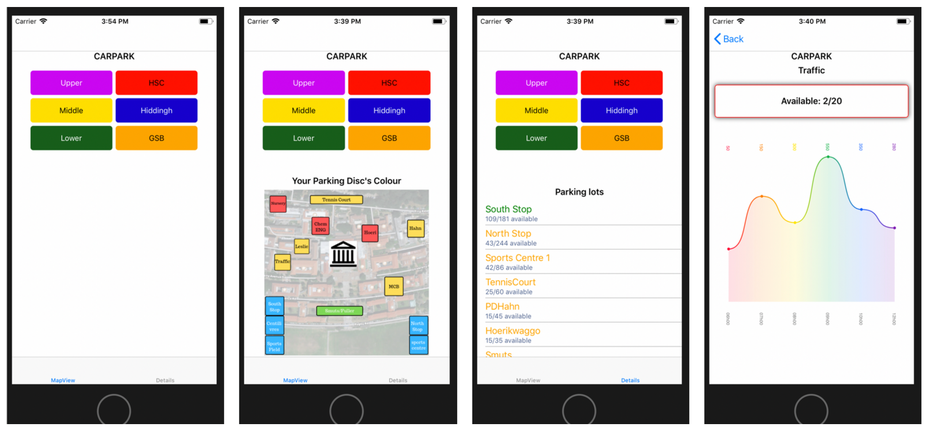


- Sensor was able to track cars at entrance/exit
- Communication with server is fast and responsive
- Cheap but robust and effective technology used
- Methods of deceiving the system discovered

- Users found that the app gives them adequate information about parking availability
- The navigation and designs were praised for simiplicity and intuitiveness
- Additional features will greatly increase the functionality of the app

## CONCLUSIONS

- Accuracy in detection with sensor requires slight improvements
- The parking behaviour of people limit the impact the system can have
- Co-designs with users is an important aspect of UCD and the success of UCD projects
- Through UCD, we can design visually beautiful apps that value function, and focus on users' needs and tasks


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